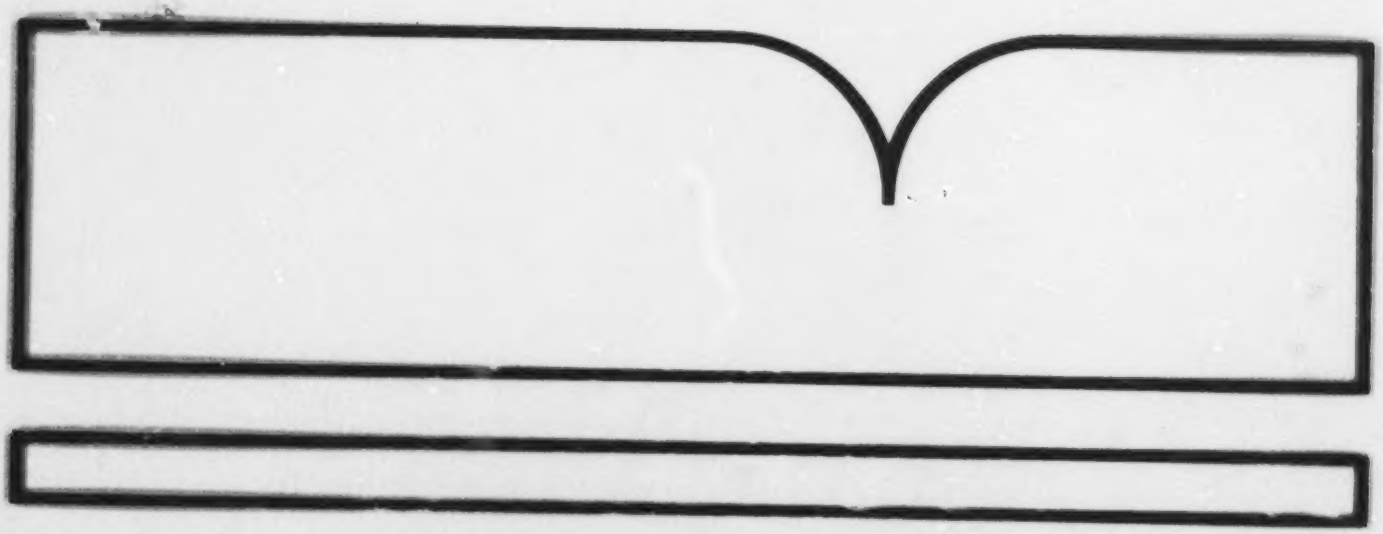
PB89-206288

Superfund Record of Decision (EPA Region 3): Rhinehart Tire Fire Site, Winchester, Frederick County, Virginia (First Remedial Action) June 1988

(U.S.) Environmental Protection Agency, Washington, DC

30 Jun 88



U.S. Department of Commerce
National Technical Information Service
NTIS

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R03-88/050
June 1988

PB89-206288

EPA

Superfund Record of Decision:

Rhinehart Tire Fire Dump, VA

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL INFORMATION SERVICE
SPRINGFIELD, VA. 22161

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. EPA/ROD/R03-88/050	2.	3. Recipient's Accession No. PB89 206288/AS
4. Title and Subtitle SUPERFUND RECORD OF DECISION Rhinehart Tire Fire, VA First Remedial Action			5. Report Date 06/30/88 6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address			10. Project/Task/Work Unit No. 11. Contract(C) or Grant(G) No. (C) (G)
12. Sponsoring Organization Name and Address U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460			13. Type of Report & Period Covered 800/000 14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Rhinehart Tire Fire (RTF) site is located in a sparsely populated rural area in Western Frederick County, Virginia, approximately six miles east of the Town of Winchester. Between 1972 and 1983, the site owner, Mr. Rhinehart, conducted a tire disposal operation which consisted of transporting discarded tires from various locations and storing them on a wooded slope behind his home. By October 1983, an estimated five to seven million tires had accumulated, and on October 31, 1983, caught fire. A hot oil produced from melting and pyrolysis of the tires seeped from the pile of tires into Massey Run. An undetermined quantity of oil flowed into Hoque Creek, which is a tributary to the Potomac River system. EPA's Emergency Response Team (ERT) installed a catch basin to trap the oil; however, because the high rate of oil and water seepage threatened to exceed the catch basin storage capacity, a lined 50,000-gallon pond was constructed immediately downslope from the burn area. Approximately 800,000 gallons of oil product was collected, removed from the site, and recycled into fuel oils. Soon after the fire, diversion structures were built by the owner of the site under a consent order agreement with EPA. EPA, through the Army Corps of Engineers, conducted a Remedial Investigation (RI) to characterize and define the extent of possible contaminants. The RI indicated that the ash-contaminated area continues to mix
(See Attached Sheet)

17. Document Analysis a. Descriptors

Record of Decision
Rhinehart Tire Fire, VA
First Remedial Action
Contaminated Media: gw, sw, soil
Key Contaminants: metals (arsenic, lead)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

Availability Statement	19. Security Class (This Report) None	21. No. of Pages 34
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) See Instructions on Reverse OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

16. ABSTRACT (continued)

with both the solid residue and the liquid seepage by means of precipitation. This remedial action will address the control of contaminated migration off-site via surface water runoff. A subsequent remedial action will address source control at the site. The primary contaminants of concern affecting the ground water, soil, and surface water are metals including arsenic and lead.

The selected remedial action for this site includes: collection of surface water runoff with gravity settling; collection of shallow ground water oily seeps, oil-water separation, and transport of water to a POTW; construction of berms to increase freeboard on two existing on-site ponds; and implementation of soil erosion controls. The estimated present worth cost for this remedial action is $1,332,340 with O&M costs of $145,000.

Record of Decision
Declaration

Site Name and Location

Rhinehart Tire Fire Site
Winchester, Frederick County, Va.

Statement of Basis and Purpose

This decision document presents the selected remedial action for the Rhinehart Tire Fire Site developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act, and to the greatest extent practicable, is consistent with the National Oil and Hazardous Substances Pollution Contingency Plan.

This decision is based upon the contents of the administrative record for the Rhinehart Tire Fire Site.

The State of Virginia concurs in the selected remedy.

Description of the Remedy

This remedy is the first operable unit for this site, and addresses the control of contaminant migration off-site via surface water runoff. The function of this operable unit is to divert and contain surface runoff at the site and to eliminate seeps of oily waste. A future operable unit will address source control at the site.

The major components of the selected remedy are:

- Soil erosion controls;
- Increased freeboard on two existing on-site ponds;
- Collection of surface water runoff plus gravity settling;
- Collection of shallow ground water oily seeps; with
    a) oil-water separation, and
    b) transport of water to POTW

Declaration

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost effective.

This remedy satisfies the preference for treatment that reduces toxicity, mobility, or volume as a principal element. Finally, it is determined that this remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

6/30/88
Date

James M. Seif
Regional Administrator
Region III

...
///

Record of Decision
ROD Decision Summary

Site Name, Location, and Description

The Rhinehart Tire Fire Site is located in a sparsely populated rural area in Western Frederick County, Virginia, approximately 65 miles West-Northwest of Washington, D.C. The Town of Winchester, Virginia, is approximately 6 miles east of the site.

The Rhinehart Tire Fire Site is located in the Western portion of the Valley and Ridge Physiographic Province, in the Appalachian Highlands. The Regional topography is dominated by a series of alternating Northeast - trending ridges and valleys. The site consists of fill and ash overlying a layer of clayey silt and shale fragments that grades to weathered bed rock. Groundwater flow in the overburden and weathered bedrock is toward Massey Run (Figure 1). Deeper regional groundwater flow may follow the bedrock fractures toward the southeast. Massey Run discharges to Hogue Creek which is a put-and-take trout stream and a tributary
of the Potomac River System.

Site History

Between 1972 and 1983, the site owner, Mr. Rhinehart, conducted a tire disposal operation which consisted of transporting discarded tires from various locations and storing them on a wooded slope behind his home. By October, 1983, a stack of tires estimated at 5 to 7 million had been accumulated. Land usage prior to 1972 is assumed to have been primarily livestock grazing.

On October 31, 1983 a fire broke out in the 5-acre tire storage area. A hot oil produced from melting and pyrolysis of the tires began to seep out of the toe of the tire pile and into Massey Run (Figure 1). An undetermined quantity of oil then flowed into Hogue Creek, which is a tributary to the Potomac River system. Subsequently, a catch basin was installed by EPA's Emergency Response Team, (ERT), to trap the oil; however, the high rate of water of oil and water seepage threatened to exceed the catch basin's storage capacity and additional storage was constructed in the form of lined 50,00-gallon pond located immediately downslope from the burn area. Approximately 800,000 gallons of oil product was collected, removed from the site, and recycled into fuel oils.

Concurrent with emergency activities at the site, EPA entered into an administrative consent order agreement with the owner of the site, under which the the owner constructed dikes and ditches for drainage control and performed collection and pumping operations to minimize the volume

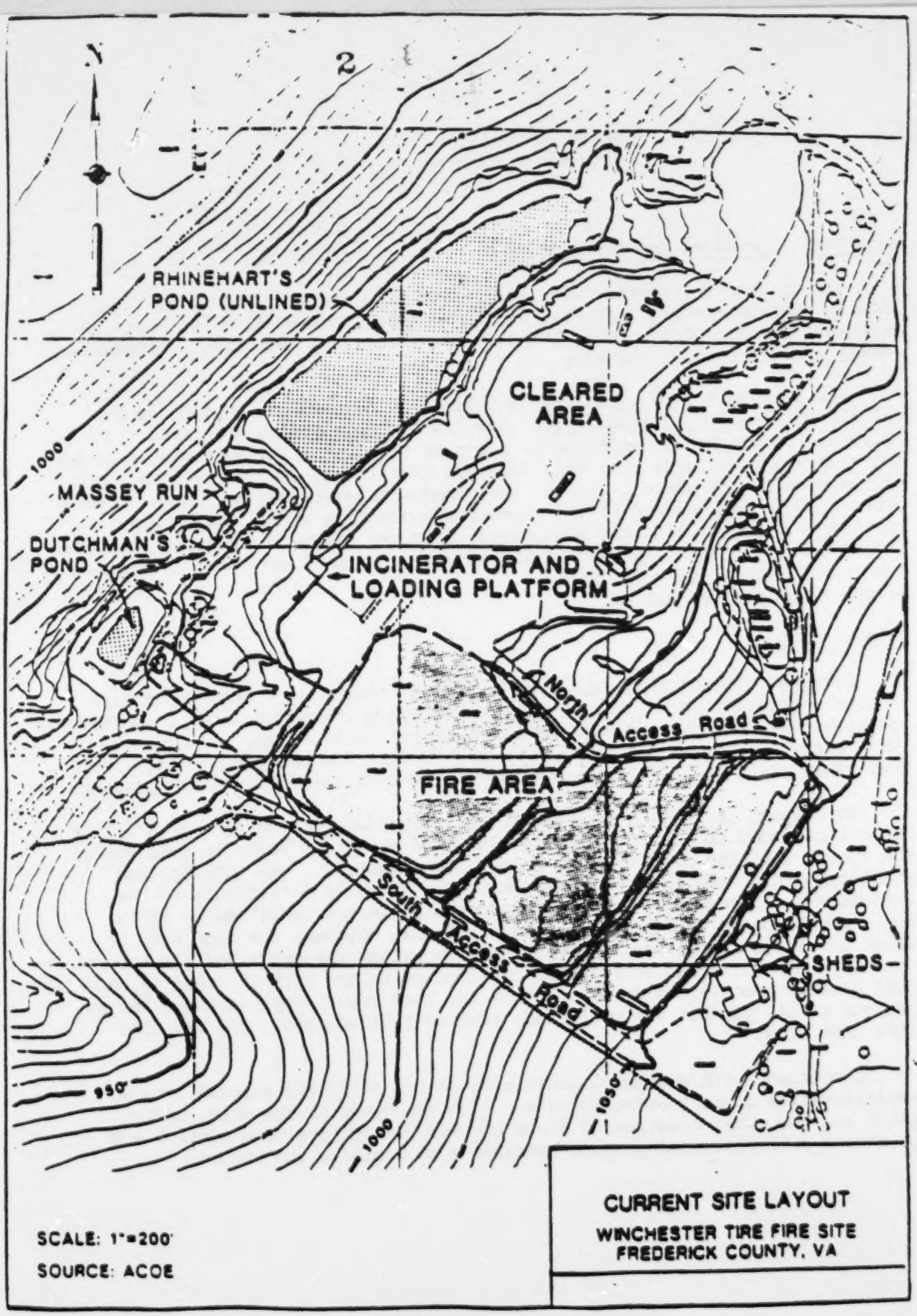

RHINEHART'S
POND (UNLINED)
CLEARED
AREA
1000
MASSEY RUN
DUTCHMAN'S
POND
INCINERATOR AND
LOADING PLATFORM
North
Access Road
FIRE AREA
South
Access
Road
SHEDS
950'
1000
1050
SCALE: 1"=200'
SOURCE: ACOE
CURRENT SITE LAYOUT
WINCHESTER TIRE FIRE SITE
FREDERICK COUNTY, VA

FIG. 1

of waste escaping from the site. More recently, the site owner has conducted trenching and grading operations which affect shallow groundwater flow and the distribution of ash residue.

Subsequent to the emergency response, EPA performed a groundwater study and initiated a Remedial Investigation/Feasibility Study for the site. The groundwater study was undertaken to determine only if groundwater contamination existed, and not to define the full extent. The study concluded that some degradation of groundwater had occurred, but contaminants were likely to remain within the Massey Run drainage basin, eventually discharging to Massey Run, with little effect on local groundwater consumers.

Activities at the Site

Subsequent to the emergency activities at the site, EPA, through the Army Corps of Engineers, conducted a Remedial Investigation (RI) to characterize and define the extent of possible contaminants at the site. The RI was performed in two phases, and a Feasibility Study (FS) was produced which summarized RI activities and proposed a partial Remedy for Site Remediation.

RI activities included the sampling and analysis of surface and subsurface soil, surface waters and groundwaters, and sediments, and biological studies of Aquatic Life.

Site Characteristics

Current conditions at the site present much different environmental concerns than were present during the fire. The Remedial Investigation of the site focused on these concerns as described below.

* While diversion structures were built soon after the fire to limit run off from entering the fire area, precipitation falling on the ash-contaminated area continues to mix with both the solid residue and the liquid seepage. Contaminated runoff has the continuing potential to affect aquatic life in downstream waters as well as downstream water users. Downstream waters are utilized as a put-and-take trout fishery.

* Two ponds remain on the site at this time. Rhinehart's Pond (unlined) was constructed before the fire and generally collects run off from an area outside that which was affected by the fire. The second, lined pond, (Dutchman's Pond), is currently receiving runoff from the burn area. Both ponds are capable of further degrading downstream surface waters from over flow and the unlined pond could be impacting shallow groundwater quality.

* In several locations near the burn area, oily groundwater seeps are visible. While it is anticipated that the volume of oily material will decrease with time, the continuing potential to contaminate local waters remains a concern.

* Ash and ash/soil mixtures remain available to further contaminate water resources, to impact air quality, and for transportation off-site as sediment.

* Subsurface materials, particularly the ash which has been buried by site regrading, and bottom sediments in both ponds and the stream contain contaminants available to degrade local water resources by overflowing into the surface water.

* Much of the oil produced by the fire entered the soils beneath the site and continues to seep from the ground.

Summary of Testing and Sampling Results

(Refer to Figure 2 for the location of groundwater monitoring wells and Figure 3 for on site sampling locations).

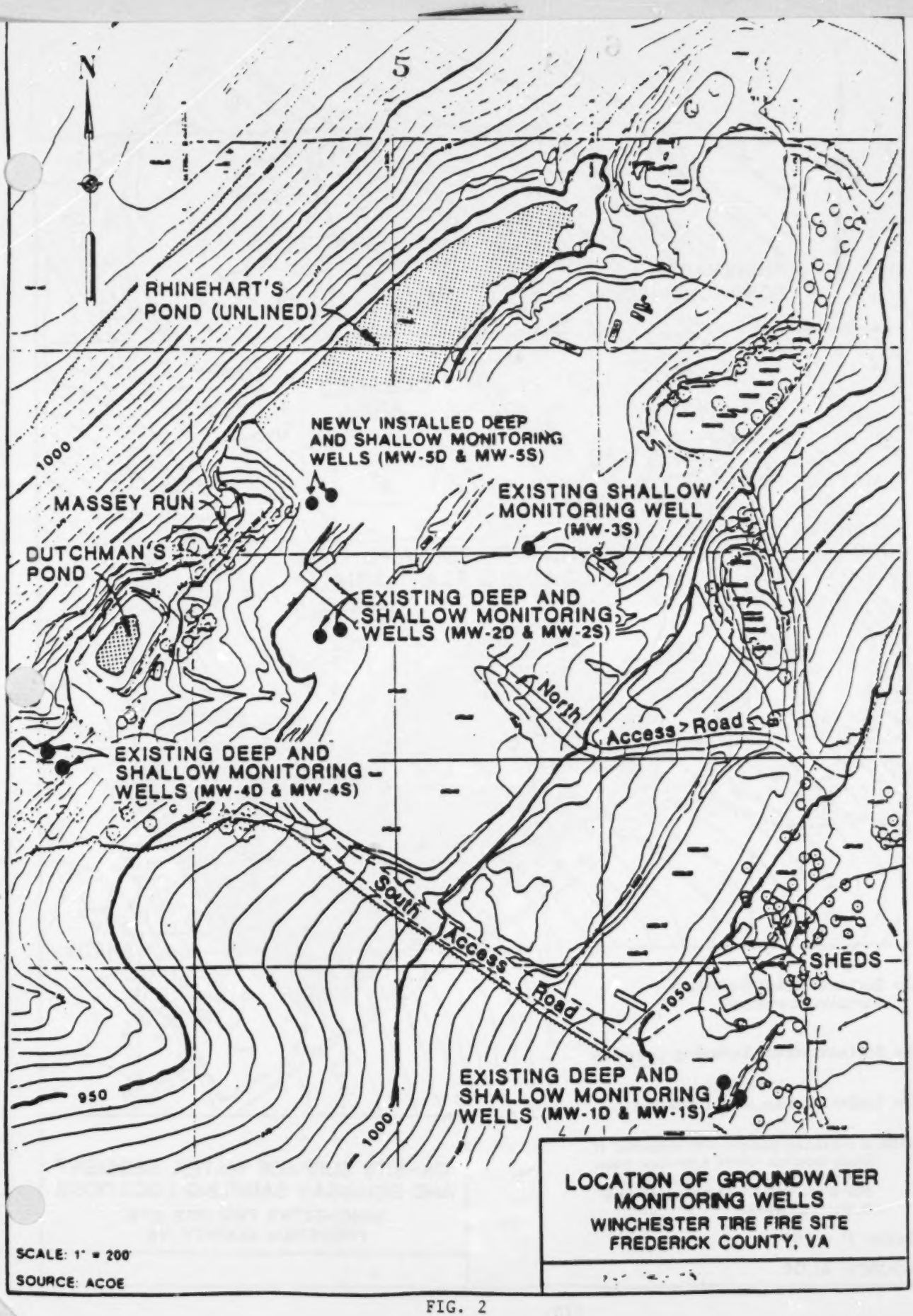

N
5
RHINEHART'S POND (UNLINED)
NEWLY INSTALLED DEEP AND SHALLOW MONITORING WELLS (MW-5D & MW-5S)
1000
MASSEY RUN
EXISTING SHALLOW MONITORING WELL (MW-3S)
DUTCHMAN'S POND
EXISTING DEEP AND SHALLOW MONITORING WELLS (MW-2D & MW-2S)
North Access Road
EXISTING DEEP AND SHALLOW MONITORING WELLS (MW-4D & MW-4S)
South Access Road
SHEDS
1050
950
1000
EXISTING DEEP AND SHALLOW MONITORING WELLS (MW-1D & MW-1S)
LOCATION OF GROUNDWATER MONITORING WELLS
WINCHESTER TIRE FIRE SITE
FREDERICK COUNTY, VA
SCALE: 1" = 200'
SOURCE: ACOE

FIG. 2

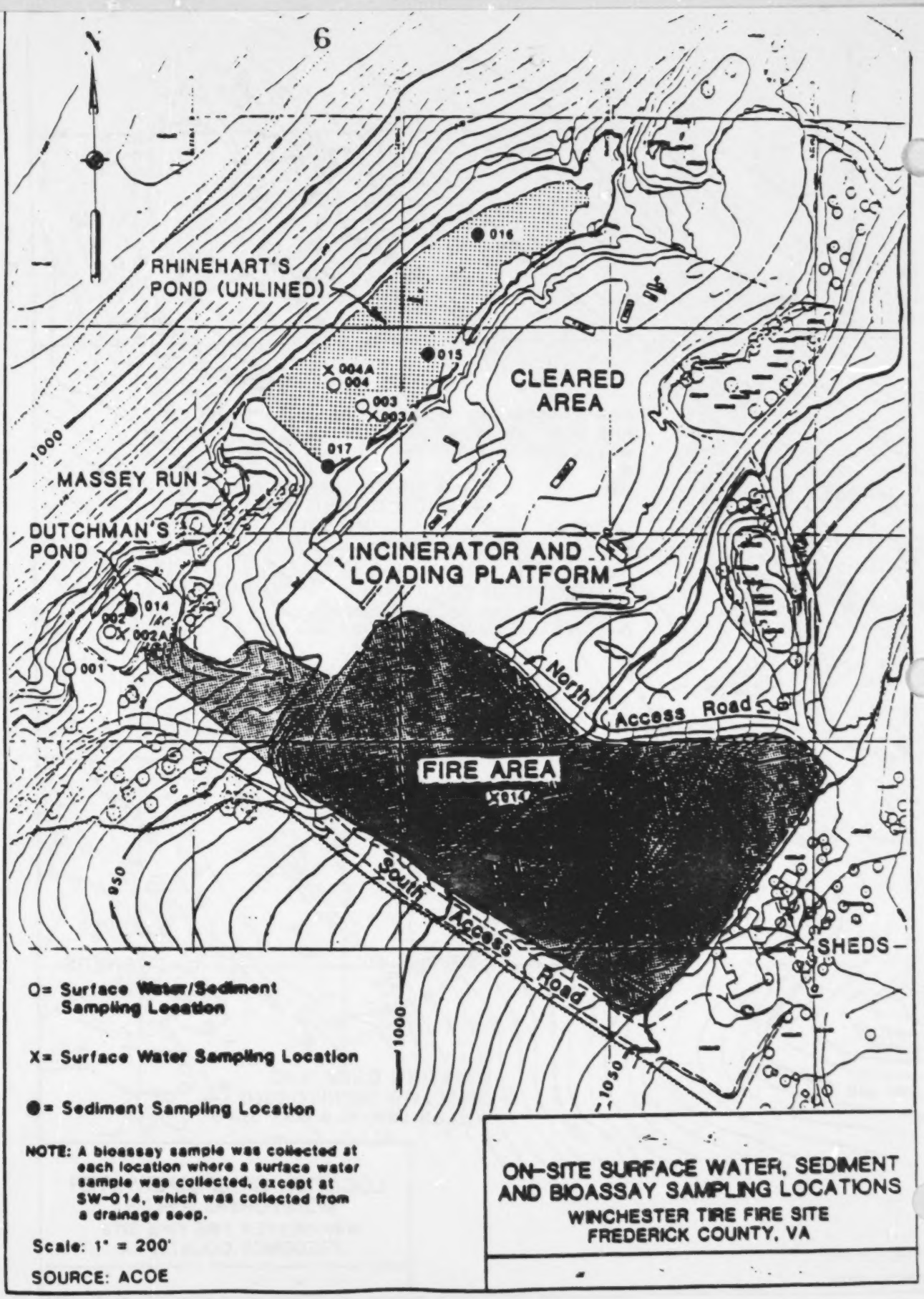

RHINEHART'S POND (UNLINED)
016
015
004A
004
003
003A
017
CLEARED AREA
1000
MASSEY RUN
DUTCHMAN'S POND
INCINERATOR AND LOADING PLATFORM
014
002
002A
001
North Access Road
FIRE AREA
X014
950
South Access Road
1000
1050
SHEDS
O= Surface Water/Sediment Sampling Location
X= Surface Water Sampling Location
● = Sediment Sampling Location
NOTE: A bioassay sample was collected at each location where a surface water sample was collected, except at SW-014, which was collected from a drainage seep.
Scale: 1" = 200'
SOURCE: ACOE
ON-SITE SURFACE WATER, SEDIMENT AND BIOASSAY SAMPLING LOCATIONS
WINCHESTER TIRE FIRE SITE
FREDERICK COUNTY, VA

FIG. 3

Geology

Field activities reveal the site to consist of fill and ash overlying clayey silt and weathered bedrock. Fill, which ranges from six inches to 7.8 feet, consists mainly of broken shale and sandstone bedrock with some ash. Underlying the fill is a layer ranging up to several ft. in thickness of relatively pure ash. Some wire and metallic materials were found within the ash layer. Material below the ash consists of brown clayey silt with shale and sandstone fragments, that grades into shale and sandstone bedrock. Bedrock at the site consists of thinly bedded shale with interbedded sandy shale and occasional thin sandstone beds. Numerous fractures are present predominantly along the 30 degree bedding planes.

Hydrogeology

Water level data obtained during the Remedial Investigation indicates that the horizontal direction of shallow ground-water flow is towards the northwest. An upward component of groundwater flow at well nest MW4, near Massey Run indicates that Massey Run is recharged by groundwater in addition to surface runoff. Deep groundwater flow in the bedrock is probably fracture controlled.

Analytical

Surface Water--Results of surface water sampling indicate very low to low concentrations of Target compound List (TCL) organics in on-site surface water. However, it does not appear that detectable concentrations of TCL organics are being transported off-site dissolved in surface waters. An elevated concentration of cadmium and possible elevated levels of iron, manganese an zinc were detected in surface water obtained from the drainage ditch on bench 3. Several other on-site surface water samples contain possible elevated levels of iron, manganese and zinc.

Sediment--Sediment sampling results indicate several semi-volatile compounds in Dutchman's and Rhinehart's Ponds. There was no evidence of any downstream contamination from semi-volatiles contained in the two ponds. On-site sediment samples, including the two ponds, had significantly higher concentrations of zinc than did the background samples. Zinc was detected in downstream samples. These concentrations decreased with increased distance from the site. Zinc was the only significantly higher metal found in all on-site samples.

Bioassay--Seven day fathead minnow larval survival and growth tests, along with Ceriodaphnia survival and reproduction tests were performed on surface water collected both on-site and offsite. Aquatic Bioassay data suggest that acute and chronic toxicity has contributed to the elimination some resident species in the stream extending from the site downstream to Station SW-Ø12.

Groundwater (Existing Monitoring Wells)--semi-quantitative estimate of 1part per billion (ppb) Benzene was detected in MW-4S. All samples from wells contained iron and manganese in concentrations exceeding National Secondary Drinking Water Regulations. These Standards were also exceeded for zinc in the non-filtered samples of MW-2S, MW-3S, MW-4S. National Interim Primary Drinking Water Regulations were exceeded for chromium and lead in the non-filtered sample from MW-2S.

Groundwater (Resident Wells)--There is no evidence of offsite groundwater being adversely affected by Fire related activities.

Groundwater (Phase II Monitoring Wells)--Concentrations of toluene, ethylbenzene and total xylenes, as well as qualitative estimates of benzene and naphthalene were detected in MW-5S. There were no analytically valid TCL organic concentrations in MW-5D. Elevated concentrations of aluminum were detected in the non-filtered samples from MW-5d; elevated concentrations of manganese were detected in both the filtered and non-filtered samples of MW5S and MW-5D.

It should be clearly noted, however, that the RI did not sufficiently characterize the nature and extent of groundwater problems. Some of the above results may or may not be indicative of contamination at the site. Future investigations will determine the needed site characteristics.

Soil (Test Borings)--Six soil samples, plus one duplicate, were analyzed for RCRA metals using TCLP and Batch Leachate procedures. TCLP results indicate no concentrations above proposed regulatory levels. Also, there were no Batch Leachate concentrations above proposed TCLP regulatory levels.

Groundwater (Packer Testing)--The pneumatic packer assembly was used to collect groundwater samples from isolated intervals along fracture zones determined during rock coring and geophysical logging. The only TCL organics detected in groundwater samples were those associated with laboratory contamination. Several samples were found to exceed National Secondary Drinking Water Standards for iron manganese in both filtered and non-filtered samples.

Ash-Soil/Ash (Test Pits)--Eight ash and soil/ash samples, plus one duplicate, were analyzed for TCL organics and inorganics, and TCLP RCRA metals. Laboratory samples were collected for 2 black ash, 2 white ash, 3 soil/ash mixtures, and 1 background sample. Estimated and tentatively identified organic compounds were found in numerous samples. Elevated metal concentrations were detected in all ash and soil/ash samples. Numerous samples were found to have metal concentrations above those of the background sample. There were no TCLP concentrations above proposed regulatory levels set for the RCRA metal analyzed. No significant differences were observed between data of the white ash, black ash, and soil/ash samples.

Air Sampling--No polyaromatic hydrocarbons, (PAHs) were detected in any samples. Because the ground was saturated during air sampling, no significant amount of airbourne dust was generated by test pit activities. Therefore, at this time it can not be determined if unhealthy concentrations of PAHs exist on-site.

Ash and Tire Debris

The extent and thickness of ash and tire debris in fill on benches 1 and 2 was determined during test pit excavation. The largest quantity and thickness (approximately 5 feet) of ash and tire debris thins out radially away from the deepest point. Approximately 125 feet northeast of the thickest area of ash and tire debris is a smaller pocket of ash and tire debris. Here the ash and tire debris thins out radially from a maximum thickness of 4 feet. The lateral extent of ash and tire debris was not determined on bench 1.

On bench 2, as on bench 1, the area with the greatest quantity and thickness of ash and tire debris is in the southwestern portion of the bench. Here the maximum thickness of ash and tire debris is over nine feet. The vertical extent of ash and tire debris could not be determined in this area. The quantity and thickness of ash and tire debris thins to zero feet of thickness gradually over a distance of 225 feet, to the Northeast. To the southeast and southwest ash and tire debris thins out to zero thickness within 50 feet.

The extent and thickness of ash and tire debris in fill on bench 3 was determined during the drilling of test borings. On bench 3, the greatest quantity and thickness (18.25 feet) of ash

and tire debris is found in the western portion of the bench. The thickeness of ash and tire debris thins out to zero feet of thickness approximately 175 feet to the northeast. Fill thickness, but not ash quantity, increases from this point towards the northeast portion of the bench, reaching a thickness of 6+ feet approximately 100 feet away.

Community Relations History

Very little public interest has been shown in the Rhinehart Tire Fire Site. EPA's Office of Public Affairs held two public meetings on the site. The first meeting, held in April 1986, was used for discussion of the RI/FS workplan. On June 27, 1988, a second public meeting was held to receive comments on the FS and the recommeded remedy for the site. In addition to the two public meetings, EPA officials appeared at a Frederick County Board of Supervisors meeting in July 1987 to discuss interim RI results. News releases and paid newspaper adds have been provided as required by Superfund Community Relations policies.

Summary of Site Risks and
Remedial Action Objectives.

Utilizing data generated during the RI, an Endangerment Assessment was conducted to evaluate the potential impacts on public health and the environment that may result from the release of hazardous substances from the Winchester Tire Fire Site.

* Present Risks

Soils - Both the carcinogenic risks and the potential for noncarcinogenic adverse health effects due to dermal contact with the soils of the Winchester Tire Fire Site were evaluated using subsurface soil samples. The site is not expected to cause any dermal contact carcinogenic risks or adverse non-carcinogenic effects. Concentrations in on-site soils were calculated to present health hazards and carcinogenic risks to young children \via soil ingestion. Arsenic was calculated to present carcinogenic risks under both most probable and realistic worst case conditions. Zinc was calculated to present a slight health hazard under most probable case conditions. However, soil ingestion is expected to occur primarily in children between the ages of two and six. Since young children are not presently expected onsite, there are not any immediately foreseeable health hazards or carcinogenic risks posed by soil ingestion.

Groundwater. The Winchester Tire Fire Site does not appear to be posing any carcinogenic risks or potential health hazards via the groundwater pathway. Results of residential well sampling in the Site vicinity found one sample from one well slightly exceeding the MCL for lead (0.05 mg/l) and potentially causing adverse health effects. However, it is not possible at this time to determine whether the site may be a source of lead for either the shallow or deep groundwater below the site. Additional testing and analysis will be conducted in a future phase of a Remedial Investigation.

Surface Water. Hogue Creek is classified as a state "put and take" trout stream. Assuming fish ingestion from this area of Hogue Creek, silver was calculated to pose potential adverse health effects under both most probable and realistic worst case conditions. Although calculations indicate that silver poses a potential health hazard, the slim possibility of an individual's total fish consumption being fish caught from Hogue Creek and the lack of a current AIC for silver make the relevance of the calculations uncertain at this time.

The mean concentrations of copper, lead, silver and zinc

detected in off-Site samples exceeded Virginia Water Quality Criteria by at least five times. In addition, chronic and acute toxicity were exhibited to aquatic life in a number of surface water samples taken from on-Site and off-Site surface water samples. Biologists from the U.S. EPA Region III Wheeling Operations Section Biology Unit suspect that zinc is the cause of the observed chronic and acute toxicity. Lead and zinc on-site soil concentrations were significantly elevated over background. Therefore, runoff from the Site may be contributing to surface water metal concentrations and adversely impacting aquatic life.

Air. Present inhalation risks are uncertain due to adverse sampling conditions during sampling. Sampling results during the Phase II Remedial Investigation were negative at least in part due to precipitation in the days preceding sampling which prevented fugitive dust generation. However, the region in which the Winchester Tire Fire Site is located averages 38 inches of precipitation a year (NUS, 1984) and there are approximately 120 days per year during which precipitation exceeds 0.01 inch (Cowherd et al., 1985). Additional sampling of modeling for air risks may be needed.

Future Risks.

Soils. Potential future carcinogenic risks and adverse health effects are also unknown at this time and will be evaluated as part of a second operable unit for this site.

Groundwater. Groundwater from the Winchester Tire Fire Site does not presently pose any health risks or hazards and there is no reason to expect this situation to change in the future because soil samples collected from the Site did not contain significant amounts of contamination. The exception to this is lead and zinc, which were present in subsurface soils at a mean concentration which exceed average background levels by more than five times. However, these elements are not very mobile in groundwater and the distance from the Site to receptor wells is great. The complicated nature of groundwater flow patterns at the Site precludes an accurate assessment of the future migration of these elements, with existing data. More sampling/analysis will be needed for these determinations.

Surface Water. Down gradient Surface water samples are currently exhibiting both chronic and acute toxicity to certain species of aquatic life. This effect is expected to continue in the near future because metals are persistent in the environment and because offsite sediment samples contained high concentrations of these elements.

Air. Due to the lack of sampling results, any potential carcinogenic risks or adverse health effects via the air pathway cannot be quantified. However, it is assumed that the Site is not currently posing any risks via the air pathway. This situation is not expected to change in the future.

Summary. The main environmental concern at the Winchester Tire Fire Site is the chronic and acute toxicity observed for Ceriodaphnia and the Fathead Minnow in surface water samples taken from locations downgradient of the Site. Zinc, which was detected in higher concentrations than ambient water quality criteria for the protection of aquatic life in a number of surface water samples, may be contributing to this toxicity. Other metals (copper, lead and silver) were also detected at higher concentrations than the other metals in on-site soil samples relative to normal background levels. Therefore, runoff from the Site into surface water may be elevating zinc concentrations in surface water and sediments. In addition, off-site sediment samples contained high metals concentrations and several organic compounds which may also be adversely impacting aquatic life.

Lead was also detected in on-site soil samples in much higher concentrations than normal background levels. If children are on the Site in the future, ingestion of on-Site soils may results in ingestion of unacceptable levels of lead. Ingestion of on-Site soils by young children may also result in adverse health effects and/or potential carcinogenic risk.

Groundwater at the Winchester Tire Fire Site currently contains very low levels of contaminants. There do not appear to be any human receptors of this groundwater. Groundwater discharging to the local surface water system may be contributing to the aquatic toxicity impacts observed in the bioassay study. However, contaminants were not commonly detected in on-site soil samples; this suggests that a significant source of contaminants available to enter the groundwater in the future does not exist.

Based on air sampling results risks could not be quantified via the air pathway. However, the low levels of most contaminants detected in soil samples, the isolated nature of the Site and the lack of activity on and adjacent to the Site suggest that the air pathway is not significant. However, this pathway may be significant during earth-disturbance activities which promote dust generation.

Remedial Action objectives are long-term, permanent remedies that minimize or prevent hazardous substance releases from the site. This is accomplished preferably through treatment and/or destruction of contaminants at the site.

The objectives of proposed remedial actions for the Winchester Tire Fire Site are being considered as both short-term and long-term objectives. The long-term objectives will consider the ultimate remediation of all sources of contaminants at the site including all pathways for the migration of those contaminants. Since additional field data and analysis are needed for such a long-term remedy, this current record of decision will focus on a short-term, or "operable unit" remedy for this site.

The operable unit proposed for the Winchester Tire Fire Site is one that would significantly reduce or eliminate the continued migration of contaminants off-site. This operable unit was chosen since, as discussed previously, the major impact from this site is continued environmental damage to off-site receptors downstream of the site. Additionally, such an operable unit will not be inconsistent with a long term remedy to eliminate contaminated pond and/or stream sediments and possibly contaminated surface/subsurface soils from site.

Alternatives Evaluation

Four alternatives for the management of migration of contaminants were examined for this site. Since the potential range of alternatives for this operable unit was not large, no preliminary screening of alternatives was performed, rather, all four alternatives were subjected to a detailed analysis.

The four alternatives considered for this action are:

Alternative No.	Alternative
1	No Action
2	Soil Erosion Controls Increase freeboard on

	Dutchman's & Rhinehart's ponds Collection of surface water runoff, gravity settling Collection of shallow ground water oily seeps: oil-water separation metals removal
3	Soil Erosion Controls Increased freeboard on Dutchman's & Rhinehart's ponds Collection of surface water runoff, gravity settling Collection of shallow ground water oily seeps: Oil-water separation truck water to POTW
4	Soil Erosion Controls plus hydroseeding Increase freeboard on Dutchman's and Rhinehart's ponds Collection of surface water runoff, gravity settling Collection of shallow ground water oily seeps: Oil-water separation, metals removal

A brief description of each alternative follows:

Alternative 1 - No Action

Under this alternative, no measures will be taken to prevent migration of contamination offsite. A quarterly sampling and analysis of surface water will be implemented to monitor offsite conditions in the unnamed tributary and Hogue Creek and on-site in Masey Run. Filtered and unfiltered samples will be analyzed for zinc, copper, lead, silver, barium, manganese and arsenic.

Alternatives 2,3, and 4

General

The goal of implementing Alternative 2,3, and 4 is to minimize the amount of contamination leaving the site via surface water. Key issues involved with reduction of migration of contamination are minimization of soil erosion, prevention of oily ground water seeps from combining with surface water runoff, and collection and

detention of surface water runoff prior to discharge offsite, in order to remove settleable solids.

Soil Erosion Controls

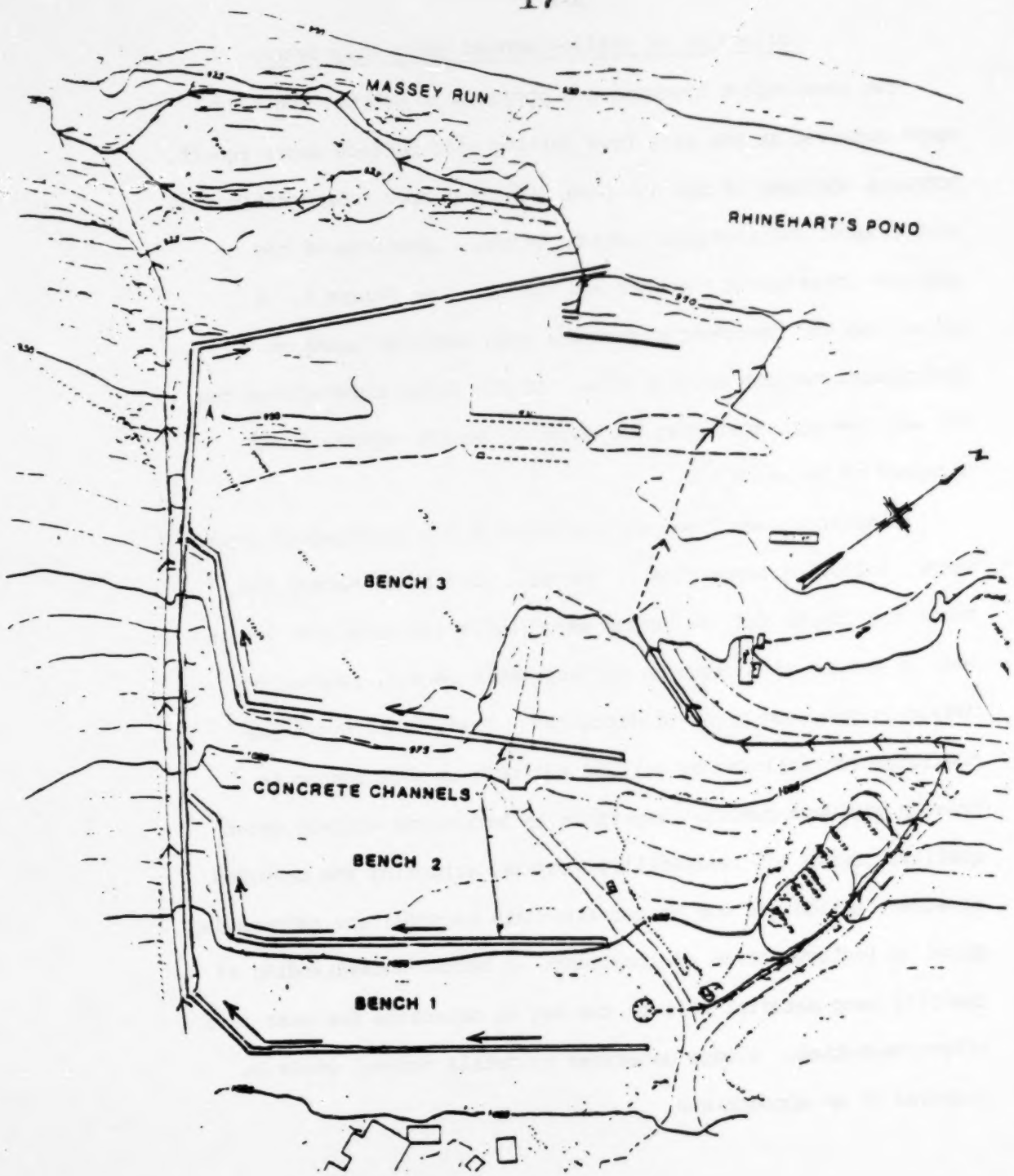
All three alternatives will include minimal regrading of the benches to direct surface water drainage toward channels that will convey the runoff to a sedimentation basin. The proposed location of the channels and basin are shown on Figure 4. Impervious channels are proposed to minimize infiltration on the benches and to prevent erosion of the south access road. Gabions will be installed on the steep slopes between the benches to prevent erosion of the slopes. Runon to the area of contamination will be minimized by regrading the area above bench 1 so that it drains to the east, around the fire area.

Increase Freeboard on Dutchman's and Rhinehart's Ponds

Alternatives 2,3, and 4 all include berms which will be placed around Dutchman's and Rhinehart's Ponds to prevent runoff from the surrounding uncontaminated area from entering the ponds. Instead, drainage will be directed around the ponds, directly to Massey Run. Key points will be riprapped. The water in the two ponds contains elevated levels of metals. The freeboard provided by the berms will prevent overtopping and further release of the contamination to the streams leaving the site during a 20 year storm.

Collection of Surface Water Runoff, Gravity Settling

Alternatives 2,3 and 4 include using the existing Rhinehart pond as a sedimentation basin designed to detain runoff.



SURFACE WATER COLLECTION SYSTEM LAYOUT

SCALE: 1" : 115'

WINCHESTER TIRE FIRE SITE
FREDERICK COUNTY, VA

FIG. 4

Collection of Shallow Ground Water Oily Seeps

Two interceptor trenches are proposed to prevent the oily seeps observed at the site from joining with surface water runoff. Previous analyses of the oil have indicated high concentrations of both organic and inorganic contamination. Locations of the proposed interceptor trenches are indicated on Figure 5. A collection and treatment system was then designed based on anticipated maximum monthly flow. In all three alternatives the oil will be separated from the water by an API separator and disposed of as waste oil.

In Alternatives 2 and 4, discharge of the intercepted ground water, following separation of the oil, will be to Massey Run. Since the onsite shallow ground water wells indicate zinc levels well in excess of background surface water levels, removal of metals is proposed prior to discharge. Traditional hydroxide precipitation followed by sulfide addition is anticipated to provide effluent quality compatable to background surface water quality. Bench top treatability studies, exploring the proposed treatment method and one or two alternate methods, are recommended prior to implementation of treatment. A better understanding of the oily seep material will be the key to determine the most cost effective method. Sludge generated by metals removal would be disposed of as appropriate.

Reproduced from
best available copy.

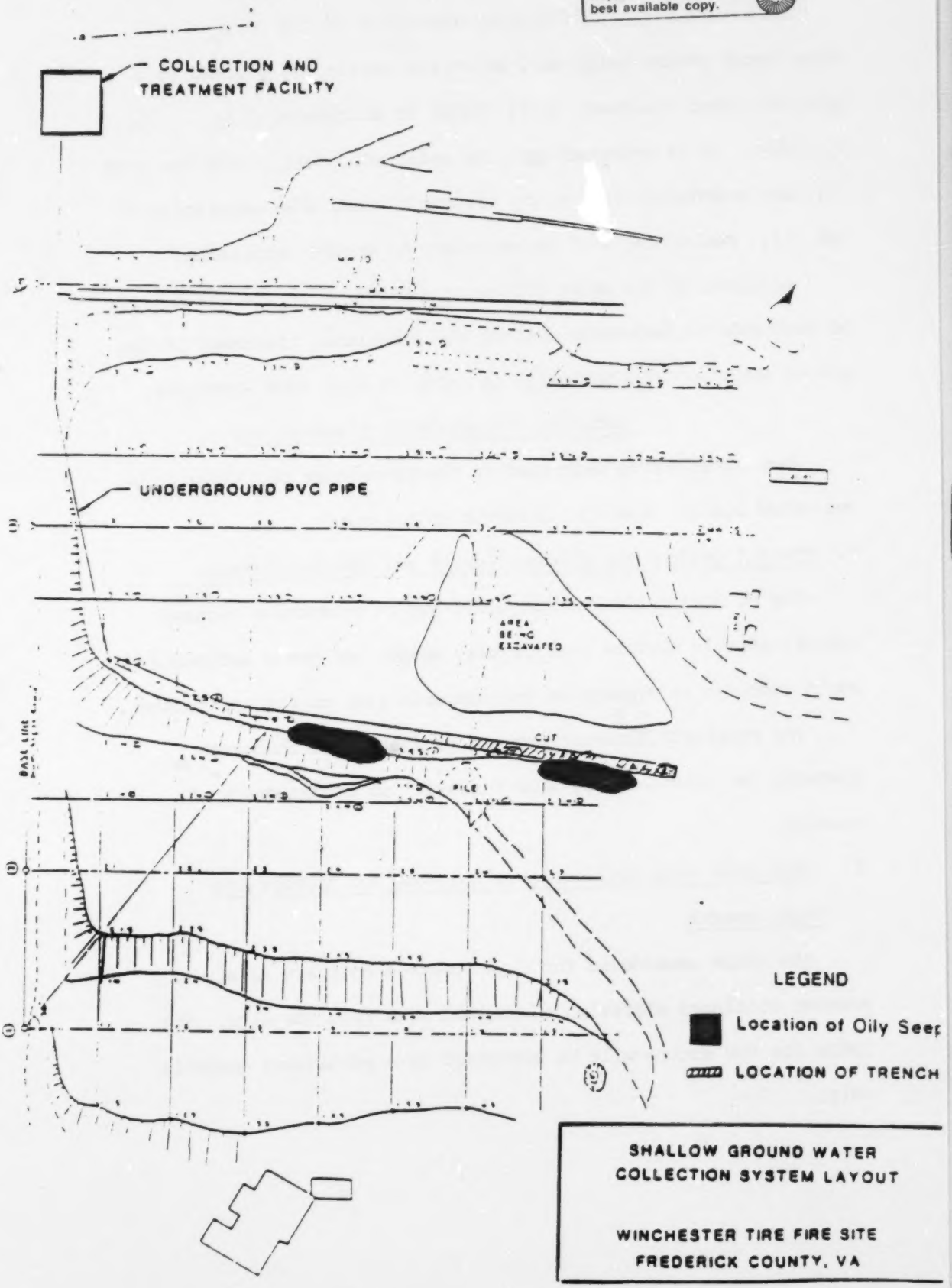


FIG. 5

In Alternative 3, following separation of the oil, intercepted ground water well be stored onsite and trucked to a publicly owned treatment works (POTW) in Winchester City, Virginia. It is expected that the water will comply with the POTW influent standards without any treatment other than separation of the oil. Monitoring will be necessary to ensure compliance.

Analyses of the water following separation of the oil should be performed to determine whether any additional treatment of the ground water will be necessary in order to meet POTW standards.

Detailed Evaluation of Alternatives

Each alternative described in the preceeding section will be evaluated against specific criteria as follows:

1. Overall protection of Human Health and the Environment

The No Action alternative would not be protective because contaminants in surface runoff, oily seeps, and ponds sediments would continue to present an unacceptable risk to the environment.

The remaining alternatives are protective in that each prevents the continued off-site migration of contaminants of concern.

2. Compliance with Applicable or Relevant and Appropriate Requirements

The ARARs considered for this operable unit are solely to prevent continued migration of contaminants from the site. The ARARs for the entire will be addressed in a subsequent operable unit.

All alternatives, with the exception of the No Action Alternative, would meet ARARs that are pertinent specifically to the management of migration of contamination via surface water by preventing the continued migration of the contaminants of concern off-site. The No Action alternative would not achieve this objective, would not be protective, and therefore, will not be considered further. (Refer to the ARARs compliance matrix).

3. Long - Term Effectiveness and Permanence

Each of the remaining three alternatives would provide some degree of long term effectiveness by improving surface water quality at the site. The permanence of each remedy would depend on the ultimate remedy selected for the site but in any case would not be inconsistent with the final remedial action.

4. Reduction of Toxicity, Mobility, Volume

Each alternative provides a reduction in toxicity by removal of metals via settling. Mobility of the contaminants into the groundwater will be reduced by the interception of leachate seeps. Alternatives 3 and 4 each additional provide a greater degree of treatment and minimization of direct contact to further reduce toxicity.

5. Short Term Effectiveness

The remedy proposed in each alternative could be accomplished in 9-12 months. A slight increase in dust and erosion would occur during remediation activities but would be mitigated by application of appropriate ARARs. Through effective controls there would be no short term effects to the community or on-site workers during this remediation.

6. Implementability

Each alternative is readily implementable, although alternatives 2 and 4 would require obtaining a local waste water treatment plant operator and would therefore involve a higher degree of operator and maintenance requirements.

Alternative 3, however, may need additional waste treatment before discharge to a POTW. Goods and services are readily available for all alternatives each of which involve straight forward construction practices.

7. Community Acceptance

A public meeting for the Proposed Remedy was held on June 27, 1988 in Winchester, Virginia. The meeting was lightly attended and no questions were received from those present. Comments, however, were received from three attendees. The responsiveness summary attached to this Decision Summarizes the Public Meeting.

8. State Acceptance

The State of Virginia has reviewed the RI/FS for this site and concurs in the selected remedy.

9. Cost

The capital, Operation and Maintenance, and Present Worth Costs for each alternative are shown below:

Cost	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Capital	Ø	975,500	780,400	1,165,400
O & M	13,600	70,000	145,600	71,600
Present Worth	55,555	1,240,860	1,332,340	1,436,820

Summary

The No Action alternative is not protective of human health or the environment and does not meet ARARs; therefore, the No Action alternative will not be considered for this site.

With respect to the remaining three alternatives, each is protective and will meet ARARs for this site. Alternatives 3 and 4 provide a greater measure of reduction of toxicity, and alternative 3 is most likely easier to implement.

Selected Remedy

The remedy selected for the first operable unit of remediation at the Winchester Tire Fire Site is Alternative 3. This alternative consists of:

- Soil Erosion Controls
- Increased freeboard on Dutchman's & Rhinehart's ponds
- Collection of surface water runoff, gravity settling
- Collection of shallow ground water silty seeps, with oil-water separation and transport of water to POTW.

This action would be an operable unit measure to control contaminant migration off-site by surface water control. This alternative would also not be inconsistent with a final remedial action for this site.

Alternative 3 will eliminate the continued migration of inorganic contaminants, particularly zinc, to Massey Run (and ultimately Hogue Creek) from surface and subsurface soils, and from sediments in the on-site ponds. Surface water quality in the streams will be improved through implementation of the selected remedy direct soil/ash contact will be minimized. The selected alternative can be operational in 9-12 months. Source control measures will not be directly addressed in this operable unit.

The selected remedy meets statutory requirements for utilizing permanent solutions and alternative treatment technologies for the principal currently identified threat at the site and is part of an overall long-term remediation of the site, is not inconsistent with any final remediation, and is protective of human health and the environment.

Applicable or Relevant and Appropriate Requirements (ARARs) pertaining to this remedy will be attained. The attached ARARs compliance matrix shows the ARARs applicable to each alternative.

The selected remedy also provides the best balance among the evaluation criteria cost in comparison with the other alternatives. Alternative 3 provides the greatest protection of possible health and the environment, will be easier to implement than alternatives 3 and 4, and has a cost about equal to alternatives 2 and 4.

This remedy will provide protection to health and the environment at this site, namely the migration of contamination via surface waters. In so doing, it will reduce the toxicity, mobility, and volume of most contaminants at the site. Complete contaminant source remediation will be addressed in subsequent operable unit. The preference for treatment to reduce toxicity, mobility and volume of the hazardous substances will be addressed in a subsequent operable unit.

Table 2 - ARARS Compliance Matrix	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Location Specific ARARS				
* ARARS dealing with archeological/historical sites, endangered species, flood plains, wetlands, siting requirements	N/A	N/A	N/A	N/A
Chemical Specific ARARs				
* Ambient Water Quality Criteria (AWQC)	N/A	Discharge of treated water to Massey Run	N/A	Same as Alt. 2
* Virginia Water Control Board Water Quality Standards	N/A	Same As Above	N/A	Same As Above
Action Specific ARARs				
* OSHA Standards	N/A	Worker Protection	Same as Alt. 2	Same as Alt. 2
* VA Water Control Board -Stream Discharge Standards	N/A	Discharge of treated water to Massey Run	N/A	Same as Alt. 2
	Alt. 1	Alt. 2	Alt. 3	Alt. 4
-Pretreatment Standards	N/A	N/A	Discharge to POTW	N/A
-Ambient Water Quality Criteria	N/A	Discharge to Massey Run	N/A	Discharge to Massey Run

VA. Air Pollution Control Board				
-Visible Emissions/ Fugitive Dust Control	N/A	Construction of REMEDY	Construction of REMEDY	Construction of REMEDY
-Soil Erosion and Sediment Control	N/A	Same As Above	Same As Above	Same As Above
RCRA requirements 40 CFR 265.222 and 265.223 (General operating requirements for existing surface impoundments)	N/A	Construction of additional Freeboard	Construction of additional Freeboard	Construction of additional Freeboard

Responsiveness Summary
for the
Rhinehart Tire Fire Dump
Winchester
Frederick County, Virginia

From May 31, 1988 to June 29, 1988, the U.S. Environmental Protection Agency (EPA) held a public comment period on the Prooposed Plan and the Remedial Investigation/Feasibility Study for the Rhinehart Tire Fire Dump in Winchester, Frederick County, Virginia. The RI/FS and other information utilized by EPA to select a preferred alternative is included in the Administrative Record which has been available to the public since the beginning of the public comment period. In addition, copies of the proposed plan were distributed at the public meeting held on June 27, 1988.

SUMMARY OF PUBLIC MEETING AND MAJOR COMMENTS

The public meeting was held in Winchester, Virginia on June 27, 1988. Those attending the meeting included representatives from EPA, the State of Virginia, the Army Corps of Engineers, area news reporters, and 2 community residents. The EPA representatives were Mr. Anthony Dappolone, Mr. William Hagel, and Mr. Harold Yates. The Virginia representative was Mr. James Adams.

During the public meeting the proposed operable unit remedy for the Rhinehart Tire Fire Site was described by Mr. Dappolone and an explanation for selection of the prevention of migration of contaminants offsite is the EPA preferred alternative. After the presentatioin, the floor was opened for comments and questions.

No questions were received from the audience. Three people, however, gave a brief statement concerning the remedy.

Mr. John Reilly, the County Administrator, expressed his belief that the majority of contaminants leaving the Rhnehart site originate from the onsite Dutchmans Pond. He also stated that he believed that natural drainage should be looked at in the remedy process instead of construction of concrete channels. Finally, he recommended that the Virginia State Water Control Board review the findings of stream investigations at the site.

Mr Kenneth Stiles, Chairman of the Board of Supervisors for Frederick County, gave his support to Mr. Reilly's stataements and added that his basic concern was that a large amount of money was spent in investigating the site.

Mr Rober Rhoads, a local citizen, expressed some concerns for the cleanup levels as stated in the Endangerment Assessment for the site.

Mr. Reilly's comments will be considered in the design phase of this project. In response to Mr. Stiles, EPA considers various alternative actions for remedial investigations; however, hazardous waste cleanups are, by their nature, expensive projects. With respect to Mr. Rhoads, his comments did not consider EPA's policies and objectives and therefore cannot be considered to affect the remedy.